

Prematurity and the obstetrician

A regional neonatal intensive care nursery is not enough

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Modern-day perinatal care has resulted in dramatically improved outcomes of premature infants, particularly those weighing 750 to 1,500 gm or of 27 to 32 weeks' gestational age. Assuming that the birth is not traumatic, the infant asphyxiated, or made hypothermic at birth, the chances of the very small premature baby developing normally are great. The delivery of an infant of ≤ 32 weeks' gestational age or weighing $< 1,500$ gm should occur at a perinatal center when possible. (AM. J. OBSTET. GYNECOL. 147:125, 1983.)

The purpose of this presentation is twofold: (1) to try to convince those of you who do not already do so to transfer all mothers who are 32 or fewer weeks pregnant, are in premature labor, or must be delivered for maternal or fetal indications to a hospital with a neonatal intensive care unit for delivery and (2) to present to those of you delivering these < 32 -week babies suggestions regarding how to deliver to our neonatal colleagues babies in the best possible physiologic condition. We do not propose to discuss the causes, prevention, or management of premature labor, nor do we intend to discuss fetal death; we intend rather to concentrate upon the methods by which we can best ensure the survival of a neurologically intact premature baby.

In the past, prematurity has been defined as the delivery of a $< 2,500$ gm infant. Currently, prematurity is defined as the delivery of an infant prior to the completion of week 37 of gestation. While it has been recognized that both gestational age and weight at birth are significant predictors of newborn survival, it is difficult to obtain reliable gestational age data on large population groups. Indeed, even today, the majority of institutions report survival data of the small premature infant in terms of weight only.

The latest statistics available indicate that the prematurity rate for the United States is 6.8% by weight and 8.9% by gestational age (Table I). Maryland, and par-

Table I. Prematurity—Magnitude of problem

Place	Year	2,500 gm (%)	37 wk (%)
United States	1979	6.9	8.9
	1980	6.8	8.9
Maryland	1979	8.6	
	1980	7.7	
Baltimore	1979		
	1980	12.2	
University of Maryland	1979	13.9	
	1980	11.1	
	1981	15.8	
	1982	15.9	17.7

Table II. Neonatal survival (28 days): University of Colorado Hospital

Birth weight (gm)	1958-1969 (%)	1974-1980 (%)
$\geq 4,000$	99.2	100.0
3,500-3,999	99.7	99.8
3,000-3,499	99.6	99.8
2,500-2,999	99.4	99.5
2,000-2,499	97.0	99.0
1,500-1,999	86.0	95.3
1,000-1,499	56.0	83.6
500-999	10.0	42.6
< 500	0.0	0

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ticularly the city of Baltimore, have low-birth-weight rates that belie the status of their economy and industrialized society. Recent low-birth-weight rates for the University of Maryland Hospital reflect the nature of its inner-city population as well as its role as one of the two tertiary maternal and newborn centers for the state.

In Maryland, since the early 1970s, neonatal intensive care has been provided through a well-structured

Table III. Neonatal survival, gestational age/birth weight

Birth weight (gm)	Gestational age					
	<30 wk		30-33 wk		34-37 wk	
	Colorado, 1958-1969 (%)	Vermont/New Hampshire, 1976-1979 (%)	Colorado, 1958-1969 (%)	Vermont/New Hampshire, 1976-1979 (%)	Colorado, 1958-1969 (%)	Vermont/New Hampshire, 1976-1979 (%)
2,000-2,499	93	100	89	94	97	96
1,500-1,999	61	77	81	95	89	96
1,000-1,499	38	72	63	88	82	91
500-999	8	30	60	62	0	62

Table IV. University of Maryland Hospital, 1979
inborn: Neonatal survival to discharge

Weight (gm)	No. of live births	Lived (No.)	Lived (%)	Lived (%)
500-749	6	0	0.0	43.8
750-999	10	7	70.0	
1,000-1,249	18	17	94.4	82.9
1,250-1,499	23	17	73.9	
1,500-1,749	17	17	100.0	97.7
1,750-1,999	26	25	96.2	
2,000-2,499	163	162	99.4	99.4
2,500-3,999	1,719*	1,716	99.8	99.8
≥4,000	111	111	100.0	100.0
Total	2,093	2,072	99.0	99.0

*Includes five babies <37 weeks and four babies >42 weeks.

consultation, communication, and transportation system involving the neonatal intensive care units at Baltimore City Hospital, The Johns Hopkins Hospital, and the University of Maryland Hospital, with backup units at Mercy, St. Agnes, and Sinai Hospitals in Baltimore in collaboration with the Maryland Institute of Emergency Medical Services Systems (MIEMSS). There is no integrated system for statewide regionalized maternal care as yet. A program was started, in 1978, to provide the obstetricians of Maryland consultative and maternal transfer services through the efforts of the Departments of Obstetrics and Gynecology at The Johns Hopkins Hospital and the University of Maryland Hospital. It was not until 1981, however, that The Johns Hopkins Hospital, the University of Maryland Hospital, and the MIEMSS formally combined their efforts and resources to begin to develop a system for statewide maternal care, including consultation, communication, and transfer. The presence of an organized system of neonatal transfer without a companion system for maternal transfer has meant that over the last decade premature infants and infants of all but the most seriously ill mothers were delivered in the community hospitals. If, following delivery, the infant needed intensive care he was then transferred to one of

the three tertiary neonatal intensive care units in Baltimore or, if those units were filled, to one of the three backup units.

Utilizing a selected review of the literature as well as certain data from Maryland and the University of Maryland Hospital we will attempt to make the following points in support of the first purpose of this manuscript: (1) Survival rates of even very small premature infants have improved significantly over the last 20 years. (2) Fetal transfer in utero improves those survival rates even more than neonatal transfer. (3) The quality of the survivors can be demonstrated to be improved in the past few years.

Improved neonatal survival

Many factors have been responsible for the greatly improved neonatal survival rates over the last 20 years, such as better-trained obstetrician/gynecologists and pediatricians. Improvements in maternal care include expansion of prenatal care programs for larger numbers of patients, greater attention to maternal nutrition, liberalized indications for cesarean section, better methods for predicting acute and chronic fetal distress, the development of methods for determining fetal maturity (particularly fetal pulmonary maturity), and the use of glucocorticoids for induction of fetal pulmonary maturity when necessary. Major advances in technology and expertise in the areas of parenteral nutrition, respiratory support, control of infection, metabolic support, neonatal neurology, and surgery have revolutionized the care of the very small premature infant.

The Department of Pediatrics of the University of Colorado School of Medicine has been among the leaders in this country in demonstrating the relationship between gestational age and birth weight and newborn survival. Data presented in Table II have been extrapolated from reports covering two different periods of time at the University of Colorado: 1958-1969¹ and 1974-1980.² As can be seen, the greatest improvement in neonatal survival has occurred with the <1,500 gm infant. Likewise, data compiled from two institutions in Vermont and New Hampshire³ in comparison with the

Table V. Maryland infant survival, 1979

	<i>Birth weight categories</i>		
	<i>500- 1,249 gm</i>	<i>1,250- 1,999 gm</i>	<i>2,000- 2,499 gm</i>
Born at 6 RICN's			
Total (No.)	180	326	779
Lived (No.)	106	298	763
Survival (%)	58.8*	91.4	97.9
Born elsewhere			
Total (No.)	238	497	1574
Lived (No.)	98	435	1536
Survived (%)	41.2*	87.5	97.6

RICN = Regional intensive care nursery.

* $\chi^2 = 12.8$; $p < 0.001$.

earlier Colorado data demonstrate the relationship between gestational age and birth weight and improved survival of the premature infant during the past 20 years (Table III).

If one segregates neonatal salvage data by 250 gm birth weight categories, it is possible to demonstrate that currently the infant weighing ≥ 750 gm has a reasonable chance of surviving the neonatal period. Table IV presents 1979 data from the University of Maryland Hospital. In column 5, survival rates to hospital discharge are presented by birth weight categories similar to those of Tables II and III, with the Maryland survival data showing slightly better results when compared with neonatal (28 days) survival.

Fetal transfer in utero versus neonatal transfer

Until relatively recently it was common for neonatal intensive-care units to report higher survival rates for infants born elsewhere and transferred into the unit as compared to those infants born at the hospital in which the neonatal intensive care unit was located. This was particularly true of the very low-birth weight infant. It was felt that this was the result of a "natural selection process" in that only the strongest of the infants survived to be transferred, the sickest dying after birth at the local hospital. Recently, Harris and associates,⁴ from the University of Arizona, and Harris and colleagues,⁵ from the University of Alabama, have reported significantly increased survival rates for the very low-birth weight infant if the fetus is transferred in utero prior to delivery. These and other authors^{6, 7} additionally report that maternal transfer prior to delivery results in fewer neonatal complications and shorter neonatal stay in comparison to those of infants transferred to neonatal intensive care units after delivery.

The Maryland Regional Neonatal Intensive Care Program evaluated the outcome to 1 year of age of all infants weighing $< 2,500$ gm born during the year

Table VI. Maryland infant survival— $\leq 1,250$ gm infants, 1979

	<i>Place of birth</i>		<i>Transfer policy, non-ICN</i>	
	<i>RICN</i>	<i>Elsewhere</i>	<i>Transfer some</i>	<i>Transfer all</i>
Total (No.)	180	238	159	48
Lived (No.)	106	98	60	22
Survival (%)	58.8*	41.2*	37.7*	45.8*

Non-ICN = Non-intensive care nursery.

*Compared to RICN birth, $p < 0.001$.

1979, with the use of matched birth and death certificate data provided by the Maryland State Health Department. The program was particularly interested in comparing the infant survival of those babies born in one of the six regional intensive care nurseries as compared to those infants born elsewhere, even though they may have been transferred to a regional center. The babies were divided into three weight categories: 500 to 1,250 gm, 1,251 to 2,000 gm, and 2,001 to 2,500 gm. Being born at one of the six regional intensive care nurseries resulted in a significantly higher infant survival rate to 1 year of age, most specifically in those children born weighing $< 1,250$ gm (Table V). In addition, the Maryland survey investigated the transfer policy of the non-intensive care nursery hospitals regarding transfer of those infants weighing $< 1,250$ gm. Those hospitals which transferred all of the very low-birth weight infants had a greater survival rate than those hospitals that transferred only their sickest low-birth weight babies (Table VI). Data from the University of Maryland Hospital, in 1979, comparing inborn and transfer neonatal survival confirmed the statewide data (Table VII).

From July 1, 1981, to December 31, 1982, 119 live-born infants of antepartum maternal transfers were

Table VII. University of Maryland Hospital: Inborn versus transfer neonatal survival—1979

Weight (gm)	Inborn		Transfer	
	No.	% Lived	No.	% Lived
500-749	6	0	4	0
750-999	10	70.0	4	25.0
1,000-1,249	18	94.4	19	78.9
1,250-1,499	23	73.9	16	81.2
1,500-1,749	17	100.0	11	63.6
1,750-1,999	26	96.2	11	90.9
2,000-2,499	163	100.0	24	83.3

delivered at the University of Maryland Hospital, excluding those infants weighing <500 gm and those with major congenital anomalies incompatible with life. During this same period 117 neonates were transferred to the Neonatal Intensive Care Unit, 12 of whom had anomalies incompatible with life. A comparison of survival to discharge or transfer from the nursery is presented in Table VIII. Of the babies born in 1982, there was one postneonatal death in a post-neonatal transfer baby; there were no postneonatal deaths in the in utero transfer group. As can be seen, there is no significant difference in the overall salvage rates between the two groups. The major difference between the two groups of infants is the larger number of small premature babies in the in utero transfer group; 49.6% of the in utero transfers weighed <1,500 gm versus 26.7% of the neonatal transfers, and 70.5% of the in utero transfers weighed <2,500 gm versus 57.1% of the neonatal transfers.

In the 750 to 999 gm birth weight category the average birth weight of the survivors in the in utero transfer group was 888 gm versus 989 gm in the neonatal transfer group. The average birth weight of the infants who died following in utero transfer was 802 gm, whereas the average weight of those who died following neonatal transfer was 1,724 gm. Indeed, 16 (84.2%) of the 19 neonatal deaths occurring in the in utero transfer group occurred in the <1,000 gm category, whereas only three (33.3%) of the nine deaths in the neonatal transfer group occurred in this category and birth weights in four were >1,500 gm.

For comparison of survival of low-birth-weight live-born infants receiving care in the nurseries of the University of Maryland Hospital in 1982, Table IX presents the low-birth-weight outborn and inborn data, including the in utero transfer data. No correction has been made for infants with congenital anomalies. Survival again is from birth to discharge from the nursery. In comparison with 1979 (Table VII), whereas the incidence of total low-birth-weight infants (<2,500 gm) delivered at the University of Maryland Hospital has increased only 3.3%, the percentage of births in all

weight categories <2,000 gm has almost doubled (Table X).

While the statistics for statewide antepartum maternal transfer in 1982 have not been collected entirely, there were an estimated 250 antepartum maternal transfers and 550 neonatal transfers to the six hospitals with Regional Intensive Care Nurseries in Maryland. The total state budget for neonatal transport is \$383,000 per year. The total budget for maternal transfer is \$30,000 per year. Neither of the budgets includes the costs of the MIEMSS communication system or the helicopter transport costs.

Improved quality of survivor

During the progress made over the past 20 years, the question that has haunted those of us involved in improving survival rates of premature infants has been whether large numbers of infants who ultimately will be a burden to themselves, their families, and society as a whole will survive. Long-term follow-up data,^{8, 9} mostly from Great Britain, regarding the ultimate development of graduates of premature nurseries in the 1940s and 1950s were quite frightening and fueled fears that success in improving premature survival would substantially increase the population of severely handicapped citizens. Only in the last few years have sufficient data emerged from modern day perinatal intensive care units that allay some fears regarding the quality of the survivors.¹⁰ In 1980, Kumar and associates,¹¹ from the University of Pennsylvania School of Medicine, presented data supporting the recent improved status of the very small premature infant. From the years 1974 to 1977, 132 babies weighing 500 to 1,250 gm were born and cared for at their institution. There were 60 survivors, and the survival rates were as follows: 500 to 750 gm, 3.3%; 751 to 1,000 gm, 41.3%; 1,001 to 1,250 gm, 72.7%. Of the 60 survivors, 50 were evaluated for physical and mental handicaps for a minimum of 18 months and a maximum of 4 years of age. Seven (14%) had major handicaps (Table XI). In addition, Kumar and colleagues collected data from eight other institutions covering the time period 1965 to

Table VIII. University of Maryland Hospital: In utero fetal versus neonatal transport, 1981-1982—neonatal survival to discharge*

Weight (gm)	In utero transport		Neonatal transport†	
	Lived/total (No.)	Lived (%)	Lived/total (no.)	Lived (%)
500-749	1/12	8.3	1/2	50.0
750-999	8/13	61.5	3/5	60.0
1,000-1,249	15/16	93.8	9/10	90.0
1,250-1,499	17/18	94.4	10/11	90.1
1,500-1,749	12/13	92.3	8/8	100.0
1,750-1,999	13/13	100.0	8/8	100.0
2,000-2,499	11/11	100.0	17/18	94.4
2,500-3,999	20/20	100.0	32/32	100.0
≥4,000	3/3	100.0	8/11	72.7
	100/119	84.0	96/105	91.4
750-1,499	40/47	85.1	22/26	84.6
750-2,499	76/84	90.5	55/60	91.7
1,500-2,499	36/37	97.3	33/34	97.1

*Congenital anomalies incompatible with life excluded.

†Transferred within 1 week of birth.

1977 with survivor follow-up from 10 months to 8 years of life. Of 229 infants evaluated, 22% were shown to have major handicaps. From the data presented it was possible to determine that those infants who were appropriately grown for gestational age (AGA) had an 18% handicap rate, whereas small-for-gestational age (SGA) infants had a handicap rate of 33%. The greater percentage of handicaps occurring in SGA infants confirms earlier data¹² from Great Britain (Table XII).

It was also possible to separate the institutions reporting outcome data into those institutions reporting out-born babies only from those reporting inborn only and those reporting both. The handicap rate for those institutions with only outborn babies was 32.5%, while those institutions with inborn only or inborn and out-born babies had rates of 14% and 17%, respectively (Table XIII). These data further support the concept of in utero fetal transfer.

In 1981 Stewart and associates¹³ reported in *Lancet* a survey of the world literature dealing with the survival and incidence of major handicaps of infants weighing <1,500 gm. To be included in the report infants must have been evaluated until at least age 12 months corrected for gestational age at birth, including a complete neurological and developmental evaluation. Since about 1960, the survival of these infants has progressively improved and the handicap rate has remained fairly stable, varying between 6% and 8% of all infants weighing ≤1,500 gm at birth.

However, if one looks only at the extremely small infant, that is, the infant weighing ≤800 gm, the prognosis is extremely poor. Britton and colleagues,¹⁴ in

1981, reported from Toronto their experience with 158 outborn infants (Table XIV). Of the 71 infants with birth weights of <700 gm, only eight survived (13.3%) and all eight had major handicaps. Thirty-one (35.6%) of the 700 to 800 gm infants survived and 12 (38.7%) had major handicaps. It is important to note that all of these were outborn babies. Those factors which correlated with good outcome in the very small infants included delivery by cesarean section, birth weight ≥700 gms, 26 weeks' or more gestational age, having eyelids separated at the time of birth, no perinatal asphyxia, and temperature greater than 36° C on arrival in the intensive care nursery. It usually is agreed by most authors that the above factors are significant for long-term survival of an intact infant. One exception is delivery by cesarean section, where there is difference of opinion with no large controlled series having been published.

Delivery of the tiny baby

And now, the second purpose of this presentation.

Obstetric considerations. From the above statistics and discussion we have arrived at the conclusion that all infants of 27 or more weeks' gestational age or ≥750 gm estimated birth weight have a good chance for survival with an intact central nervous system. We suggest that obstetrician/gynecologists should do all that is reasonable to deliver an infant that is not asphyxiated, is without trauma, and is not hypothermic when it arrives in the neonatal intensive care nursery.^{14, 15} The method of delivery will depend upon a number of factors, including whether the mother is in spontaneous labor and whether delivery is indicated for treatment of ma-

Table IX. Total low-birth weight neonatal survival to discharge, 1982

Weight (gm)	Outborn		Inborn in utero transport	
	Lived/total (No.)	Lived (%)	Lived/total (No.)	Lived (%)
500-749	0/1	0.0	1/10	10.0
750-999	4/6	66.7	7/10	70.0
1,000-1,249	11/13	84.6	11/13	84.6
1,250-1,499	4/7	57.1	13/16	81.3
1,500-1,749	5/5	100.0	3/3	100.0
1,750-1,999	3/5	60.0	10/10	100.0
2,000-2,499	<u>11/12</u>	<u>91.7</u>	<u>11/11</u>	<u>100.0</u>
Total	38/49	77.5	56/73	76.7

Table X. University of Maryland Hospital: Incidence of live-born, low-birth weight infants: 1979 versus 1982

Weight (gm)	1979 (2,093 live births)		1982 (2,273 live births)	
	No.	%	No.	%
<1,250	34	1.6	76	3.3
<1,500	57	2.7	107	4.7
<2,000	101	4.8	191	8.4
<2,500	263	12.6	362	15.9

ternal conditions, such as severe preeclampsia, or for fetal indications, such as intrauterine growth retardation or perhaps erythroblastosis fetalis.

Preparation for the delivery of a tiny baby. As soon as possible, the obstetric anesthesiologist and the neonatologist should be notified of the impending delivery. If one is practicing in an institution without a neonatal intensive care unit the regional neonatal intensive care unit which serves the community hospital should be notified and, if possible, a resuscitation team made available in the local hospital. In an effort to prevent perinatal asphyxia all patients in premature labor or patients who will have premature labor induced should have electronic fetal monitoring. If the membranes are ruptured, an internal scalp electrode should be used when possible, but membranes should not be ruptured simply to attach an internal electrode, assuming that one is able to monitor the fetus externally. When tocolytic agents are used to inhibit premature labor, these should be stopped as soon as it is recognized that labor is progressing. Sedation and narcotics should not be used. The choice of anesthetic agents for delivery will depend greatly upon the obstetric anesthesia capability of the particular hospital in which the baby is to be delivered; however, it is generally felt that epidural anesthesia given by a well-trained obstetric anesthesiologist is the best form of anesthesia. A paracervical block should not be used because of its potential harmful effect to the premature

Table XI. University of Pennsylvania, 1974-1977: <1,250 gm inborn babies with handicaps

System	Handicap	No.
Ocular	None	43
	RLF,* grade III	2
	RLF,* grade V and caudal regression	1
Neurological	Hemiplegia and SS disease	1
Developmental delay	All of above	$\frac{2}{7}$ (14%)

*RLF = Retrolental fibroplasia.

infant. It goes without saying that all patients in premature labor should be under constant surveillance of a well-trained nurse or a physician because of the rapidity with which some patients in premature labor are delivered.

Delivery of the tiny baby. A generous episiotomy is advisable unless the patient has a very large, relaxed vaginal outlet. While forceps delivery of the larger premature infant may be helpful in preventing trauma to the baby's head, there is no forceps available that properly fits the head of the very small baby, i.e., one weighing <1,500 gm. Instead of the use of forceps for these small babies, a slow, very controlled delivery with the operator's hand is advisable.

There remains disagreement regarding the advisability of cesarean section for all very small infants.^{15, 16} At this time there is no large controlled study substantiating the efficacy of cesarean delivery of these infants. Because of the increased maternal morbidity associated with cesarean section, we have adopted the following indications for cesarean delivery of the small premature infant with an estimated fetal weight of ≥ 750 gm and ≥ 27 weeks' gestation: (1) fetal distress unresponsive to conservative treatment, (2) breech presentations and gestational age <32 weeks, or (3) delivery for maternal or fetal indications and a closed, firm cervix.

<i>Inborn, University of Maryland Hospital</i>		<i>Inborn, total</i>		<i>Total babies</i>	
<i>Lived/total (No.)</i>	<i>Lived (%)</i>	<i>Lived/total (No.)</i>	<i>Lived (%)</i>	<i>Lived/total (No.)</i>	<i>Lived (%)</i>
0/7	0	1/17	5.8	1/18	5.5
12/17	70.6	19/27	70.4	23/33	69.7
15/17	88.2	26/30	86.7	37/43	86.0
14/15	93.3	27/31	87.1	31/38	81.6
26/26	100.0	29/29	100.0	34/34	100.0
45/45	100.0	55/55	100.0	58/60	96.7
<u>159/160</u>	<u>99.4</u>	<u>170/171</u>	<u>99.4</u>	<u>181/183</u>	<u>98.9</u>
271/287	94.4	327/360	90.8	365/409	89.2

Table XII. Handicaps of <1,250 gm infants*

Series	Status at birth		Handicaps				Total	
	AGA (No.)	SGA (No.)	AGA		SGA			
			No.	%	No.	%	No.	%
1	28	15	7	25	6	40	13	30
2	37	13	3	8	4	30	7	14
3	18	2	5	27	1	5	6	30
4	13	1	1	8	1	100	2	14
5	8	8	3	37	1	12.5	4	25
	104	39	19	18	13	33	32	22

*Collected series by Kumar and associates.¹¹

If there is a well-formed lower uterine segment the transverse cervical incision is preferable for both vertex and breech presentations. If there is no well-formed lower segment, then the low vertical incision is made.

Whether the baby is delivered vaginally or abdominally, it is extremely important to handle the baby gently in an attempt to prevent bruising and extravasation of blood into the subcutaneous tissues. The infant should be dried and covered with a warm, dry towel immediately. The umbilical cord should not be clamped until there has been sufficient autotransfusion from the placenta. This usually can be accomplished by holding the infant 30 cm below the introitus for 30 seconds. Early clamping of the cord can deprive the infant of a significant amount of its blood volume, leading to hypotension.

Maternal management after premature delivery. In an effort to promote maternal and paternal bonding and to allay maternal and paternal anxiety, the parents should be allowed contact in the delivery room with the infant and then in the intensive care nursery as soon as possible.¹⁷ The obstetrician/gynecologist should encourage the mother to breast-feed and initiate pumping of the breast shortly after delivery so that she will be able to provide milk for the infant when enteral feedings can be instituted. Breast milk is felt by some to be the best source of nutrition for the infant and may

Table XIII. Handicaps of <1,250 gm infants*

<i>Type of nursery</i>	<i>Total No.</i>	<i>Handicaps</i>	
		<i>No.</i>	<i>%</i>
Outborn only	80	26	32.5
Inborn and outborn	99	17	17.2
Inborn only	50	7	14.0

*Collected series by Kumar and associates.¹¹

Table XIV. Outcome of <800 gm infants*

<i>Birth weight (gm)</i>	<i>Total No.</i>	<i>Survival</i>		<i>Handicaps</i>	
		<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
≤699	71	8	13.3	8	100.0
700-800	87	31	35.6	12	38.7

*Britton and associates.¹⁴

decrease the risk of one of the major complications of the small premature baby, i.e., necrotizing enterocolitis. With encouragement and the use of one of the new mechanical breast pumps, successful lactation usually is possible, even for prolonged periods of time, prior to the baby's ability to suckle at the breast.

Emotional support. It goes without saying that the obstetrician/gynecologist must provide a major source

of emotional support for both the mother and the father immediately following the birth of the premature infant. The obstetrician/gynecologist should do all that is possible to allay guilt reactions that the parents might have. While the neonatologist will provide the major source of emotional support for the parents while the infant is in the intensive care nursery, the obstetrician/gynecologist should visit the baby in the nursery when possible and continue his support for the parents as long as is practical.

Interconceptual care. Evaluation of the possible causes of premature labor should begin immediately after delivery of the baby and placenta. A careful pelvic examination and digital examination of the uterine cavity should be carried out to determine the possible presence of unsuspected uterine anomalies or leiomyomas. If uterine exploration is not possible a hystrogram prior to the next pregnancy may be advisable. After the uterus has involuted and the patient has begun menstruation, "sizing" of the endocervix with graduated uterine dilators is helpful in diagnosing or confirming an incompetent cervix. If a dilator 1.2 cm in diameter can be passed through the internal os during the progestational phase of the menstrual cycle without undue patient discomfort there is good evidence for an incompetent cervix. Counseling regarding birth interval is quite important. The usual patient reaction if there has been a stillbirth or neonatal death is to try to become pregnant again as quickly as possible. Unfortunately, shortening of the birth interval increases the risk for premature labor with a subsequent pregnancy. Consequently, the physician must be certain that the patient and her husband understand the need for and instruction in appropriate contraceptive methods. In addition, marital and interpersonal relationships frequently are strained to the breaking point by anxiety and guilt reactions of the parents following a premature delivery. Having a child in an intensive care nursery for prolonged periods further intensifies these reactions, particularly if the nursery is far removed from the parents' home. The time away from home and work and the expense involved in frequent visits to the nursery compound the problems. Both the neonatologist and the obstetrician/gynecologist should be aware of these potential problems and be prepared to intervene themselves or refer for appropriate help.

Conclusion

Prematurity remains the most important problem facing the obstetrician and the pediatrician in terms of reproductive outcome. A better understanding of the etiologies involved must be found. Better methods of prevention and treatment must be developed. Knowledge and understanding of normal physiology and pathophysiology of the infant must continue to be expanded. Technologic advances for care of the infant must be made. Obstetrician/gynecologists and pediatricians must be trained to appreciate and use the consultative and referral resources of the regional (tertiary) perinatal center.

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